March 31, 2010

Bruce Elliott, Director
Safety/Rad Waste Directorate
Department of the Army
Headquarters, U.S. Joint Munitions Command
1 Rock Island Arsenal
Rock Island, IL 61299-6000

SUBJECT: DEPARTMENT OF THE ARMY, ALTERNATE WASTE DISPOSAL REQUEST, LAKE CITY ARMY AMMUNITION PLANT, INDEPENDENCE, MISSOURI (Mail Control Number 318758)

Dear Mr. Elliott:

This refers to your January 19, 2010, letter informing the U.S. Nuclear Regulatory Commission (NRC) of the Army's desire to dispose of soil and sand containing depleted uranium pursuant to Title 10 Code of Federal Regulation (CFR) 40.13(a) (ML100200958). The NRC staff has completed its review of your request, and has determined that additional information (RAI) is needed to complete the NRC review. Please provide within 30 days from the date of this letter, written responses that address the following RAIs. When responding to the RAIs please refer to Mail Control Number 318758.

1. Provide additional information regarding the storage of Lake City Area 10 waste at USEI.

   The Residual Radioactivity (RESRAD) dose report attached to your letter indicates that the Area 10 waste will be evenly distributed across an area of 88,221 m^2 and a thickness of 33.6 m. If the waste from Area 10 was disposed of in a more concentrated manner, the resulting dose could be higher. Therefore, provide additional information that supports the basis for the assumption that the waste from Area 10 will be disposed of homogeneously across the entire site.

2. Provide additional information pertaining to the chemical form of depleted uranium (DU) for the Area 10 waste.

   It is not clear how the initial soil concentrations of U-234, U-235, and U-238 used as inputs into RESRAD were determined. The initial soil concentration of U-238 associated with depleted uranium (DU) appears to be based on the known composition of U-238 in depleted uranium (99.27% U-238 in DU) and the assumption that the waste would be distributed evenly across the entire USEI site. The same methodology does not appear to be used in the calculation of initial soil concentrations of U-234 (0.72% of DU) and U-235 (0.01% of DU) used as inputs for the RESRAD model. Therefore, describe the methodology used to develop the distribution of U-234, U-235, and U-238 and the development of initial soil input concentrations used in the RESRAD analysis, and provide the basis on which this methodology was used.

3. Provide information to clarify the calculation of the inhalation dose.

   Table 2 of the dose assessment provided radionuclide concentrations in waste used to calculate the inhalation dose. It is not clear how these concentrations were determined. It is also unclear how the inhalation factors and the dose conversion factors used in the calculations were derived. Therefore, provide additional information that clarifies the description of the methodology used to determine the radionuclide-specific concentrations used to calculate inhalation dose. The description should include information used to derive the inhalation factors and the dose conversion factors used to calculate the total inhalation dose. Additionally, the description must support the basis for using these values in the calculation of total dose.

4. Provide information regarding intruder analysis.

   The intruder analysis was conducted to demonstrate that disposal of the material will not produce a dose of more than a few millirem to an intruder on the site in the model time frame. The description of the analysis does not discuss the type of intruder scenario (i.e., residential, recreational user, hunter, etc.), used, nor does it justify the pathways used in the analysis. A review of the RESRAD analysis shows that all of the RESRAD exposure pathways except aquatic foods are considered and that a cover of 3.6 m is included. Therefore, provide a revised intruder scenario that is based on one of the above scenarios with adequate justification for the pathways considered in the analysis. Your revision must discuss the methodology used to calculate the intruder dose, and the basis for maintaining a cover.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions regarding this letter, please do not hesitate to contact me at (630) 829-9621.

Sincerely,

/RA/

Katie N. Streit
Materials Control, ISFSI, and
Decommissioning Branch

License No. SUC-1380
Docket No. 040-08767

Cc: C. Sperry, USEPA
M. Barnes, MDNR
F. Whitaker, LCAAP

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*See previous concurrence
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